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Remarks/Arguments:

Claims 1-39 are in the application. Claims 1, 6, 20, 25, 29, 36, 37, 38, and 39 are in independent form. Claims 1-5, 20-24, and 29-35 are allowed.

Double Patenting

Claims 8, 10, and 11 stand objected-to under 37 CFR 1.75 as being substantial duplicates of other claims. The Examiner states that “each of the optical columns further includes at least one electron optical element that is within the system vacuum chamber” is already provided in claim 7. Amended claim 8 clarifies that the additional element is outside the intermediate chamber.

Regarding claims 10 and 11, the Examiner states that “each of the multiple electron gun is contained within its own sealable gun chamber” or “each of the sealable gun chambers includes multiple electron guns” is already provided in claim 9. Claim 9 recites that “multiple electron guns are positioned within one or more sealable gun chambers positioned within the intermediate chamber.” Thus, claim 9 could include, for example, multiple electron guns in a single gun chamber or multiple guns positioned in multiple gun chambers. Amended claim 10 clarifies that “each of the multiple electron guns is contained within a sealable gun chamber that does not contain any other of the multiple electron guns.” Claim 11, on the other hand, recites: “each of the sealable gun chambers includes multiple electron guns.” Since claim 9 encompasses the scope of claims 10 and 11, claim 9 is broader than and not a substantial duplicate. Applicants request, therefore, that the rejection be withdrawn.

Drawings

The drawings stand objected to for failing to show “the lower deflection elements” in claim 37, line 3. Applicants respond as follows. FIG. 7, for example, shows, a first electrical deflection electrode 710 and a second electrical deflection electrode 712. Electrode 712 is shown lower than electrode 710. Amended paragraph 1043 of the specification, add the terms “lower” and “element” to the description of second electrode 712. Because an electrode is an element and second electrode 712 is shown in FIGS. 7 and 8 to be lower than first electrode 710, amended paragraph 1043 does not add new matter.

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Claim objections

Claims 1, 4, 6, 12, 23, 28-35 and 37 stand rejected for informalities.

Amended claim 1 recites "multiple electron gun chambers," so the reference to an individual chamber is changed from "an electron gun chamber" to "one of the multiple electron gun chambers."

In place of "each of the multiple electron guns," claims 4 and 5 are amended to recite "each electron source" to be consistent with claim 1.

Claim 6, line 3, "a" is changed to "the" as requested.

In claim 7, "each of the multiple electron guns" is changed to "each of the one or more electron guns" to be consistent with claim 6.

Regarding claim 11, applicants submit that since claim 9 recites "one or more sealable gun chambers," claim 11 is correct in reciting "each of the sealable gun chambers."

Regarding claim 12, applicants submit that "each of the multiple electron guns" is proper because claim 9 recites "multiple electron guns," and deleted the word "optical" before "optical columns" to clarify the antecedent basis.

Regarding claim 16, applicants submit that "each of the multiple electron guns" is proper because amended claim 6 recites multiple electron guns

Regarding claim 23, applicant submits that "an emitter" "a suppressor" and "an extractor" are proper, since claim 23 recites one or more additional electron guns and the components of each of the additional guns are in addition to the components in parent claim 20.

"With" is deleted from claim 25, line 5.

Claim 28, line 5, "a target" is changed "the target." Claim 28, line 2, applicants submit that "one or more of the multiple gun vacuum chambers" is proper.

Claims 29-31 are amended as requested.

Claim 32 is amended to be consistent with the language of the parent claim 29.

Claims 33-35 are corrected as requested.

The preamble of claim 37 is amended to remove "multiple electron columns."

Claim Rejections under 35 USC § 112

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Claim 36 is amended to recite method steps.

Claim Rejections under 35 USC § 102

Claims 6-19, 25-28, and 36-38 stand rejected under 35 USC § 102(e) as anticipated by U.S. Pat. No. 6,476,390 to Murakoshi et al. ("Murakoshi"). Applicants respond as follows

Claim 6 recites "one or more electron guns positioned within each of the one or more intermediate vacuum chambers." Murakoshi teaches the use of three chambers: an electron gun chamber 101, an intermediate chamber 102, and a sample chamber 103. FIG. 1, Col. 9, lines 59-63. In Murakoshi, the electron guns are in the electron gun chamber 101, not in intermediate chamber 102. By placing one or more electron guns within each of the one or more intermediate chamber, instead of outside of the intermediate chamber as taught by Murakoshi, applicants facilitate replacement of failed electron sources and simplify construction. Claim 9 recites that "multiple electron guns are positioned within one or more sealable gun chambers positioned within the intermediate chamber." Again, Murakoshi teaches an electron gun chamber 101 that is outside of intermediate chamber 102.

Amended Claim 16 clarifies that corresponding optical elements of different columns are electrically connected and supported by the same sheet of metal that supplies the same electrical potential to each.

Claim 25 is amended to recite one or more "removable" gun chambers. The gun chamber of Murakoshi is within chamber 200 and not removable.

Regarding claim 37, applicants submit that Murakoshi does not teach lower deflection elements of different columns formed from the same sheet of metal. It appears that the elements of the different columns of Murakoshi are separated. Murakoshi's shield electrode 16 and 17 also teach away using the same piece of metal to provide optical elements for different columns.

Also regarding claim 37 and 38, applicants submit that Murakoshi does not teach finely focusing the primary beam of the electron column by applying a bias to the deflectors. Col. 9, line 5, cited by the examiner refers to deflecting secondary particles for detection, not to finely focusing the primary beam.

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Lastly, regarding claim 39, applicants agree that the use of a suppressor is known, but applicants submit that Murakoshi does not teach maintaining a gun lens first element at approximately the same potential as the extractor.

Applicants submit that the application is now in condition for allowance and respectfully requests that the case allowed.

Respectfully submitted,

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